

d. Remarks

Amendments

The amendments to dependent claims 7 and 8 are, e.g., supported at page 4, lines 4 – 7 and 11 – 13.

5 The amendments to claims 13 and 25 are, e.g., supported by Figures 1 and 4.

Rejections under 35 U.S.C. 112

At page 2, 2nd par., 2nd – 3rd sentences, the Office Action rejects claims 3 – 5 and 15 – 17 and states that “Claims 3 – 5 and 15 – 17 are indefinite because a channel, which
10 is a structural configuration, has no electrical properties.” (underlining added)

Applicants respectfully disagree that a “structure” cannot have electrical properties.

With respect to claims 3 – 5, base claim 1 recites that the “channel is configured to operate as an optically controlled switch”. Among properties of “switches” are resistances, e.g., in closed and open states, and breakdown voltages. Thus, in claims 3 –
15 5, the recitations of such properties for a channel, which is configured to operate as a switch, are neither vague nor indefinite.

With respect to claims 16 - 17, base claim 13, recites a “channel configured to operate as an optically controlled switch”. In analogy to the argument given above for claims 3 – 5, the recitations of claims 16 – 17, which limit the channel’s resistance or
20 breakdown voltage, are neither vague nor indefinite, because resistances and breakdown voltages are properties of switches.

With respect to claim 15, the further recitation that “the light source is situated to illuminate the entire length of the channel” is neither vague nor indefinite, because claim 15 depends from claims 13 and 14, which already recite the channel and the light source.

25 At page 2, 2nd par., 4th sentence, the Office Action rejects claims 7 – 11 as being unclear.

With respect to amended claim 7, this claim recites that the organic material comprises conjugated organic oligomers or conjugated organic polymers. This recitation limits the composition of an organic material, which was already recited in base claim 1.
30 For that reason, amended claim 7 is neither vague nor indefinite.

With respect to dependent claims 8 – 10, these claims recite properties of the organic material of base and intermediate claims 1 and 7. Claim 8 limits the composition of the oligomers or polymers of the material as recited in claim 7. Claim 9 recites that “the material includes one of an electron acceptor or an electron donor” thereby limiting
5 the composition of the material. Claim 10 further limits the electron acceptor or electron donor of intermediate claim 9. Also, none of the recitations of claims 8 – 10 use vague or indefinite terms. For these reasons, claims 8 – 10 are neither vague nor indefinite.

With respect to claim 11, this claim recites that “the light source is one of an LED and a laser diode”, wherein base claim 1 already recites a light source. For this reason,
10 there is nothing vague or indefinite in claim 11.

At page 2, 2nd par., 5th and 6th sentences, the Office Action rejects claims 13 – 31 as unclear.

With respect to amended claim 13, this claim recites functional and physical relationships between the circuit and the MEM device therein. Thus, claim 13 is neither
15 vague nor indefinite.

With respect to claim 14, this claim recites a “light source positioned to illuminate the channel ...”, wherein base claim 13 already recites the channel. Thus, claim 14 recites a light source and a relationship between the light source and the already recited channel. Thus, claim 14 is neither vague nor indefinite.

20 Dependent claims 15 – 17 and 23 - 24 are neither vague nor indefinite for further limitations that they recite on elements of base and intermediate claims 13 and 14.

Dependent claims 18 - 22, are neither vague nor indefinite for further limitations that they recite on elements of base claim 13.

With respect to claims 25 – 27, these claims are neither vague nor indefinite for
25 reasons similar to those provided above for claims 13 – 24.

At page 2, par. 2, last sentence, the Office Action rejects claims 28 – 31 stating that these claims “are likewise indefinite for failing to clearly state the structural features and the method of operation, [sic]”. Claim 28 recites “applying a voltage across an organic photosensitive switch and applying a light intensity to the organic photosensitive
30 switch while applying the voltage, ...” These recitations include a structural feature, i.e., an organic photosensitive switch. These recitations also describe two steps in a manner

that informs a person of the scope of the claim and that would enable a person to determine whether a method infringes that of claim 28. For these reasons, claim 28 is neither vague nor indefinite. See M.P.E.P. 2173. The further language and limitations in dependent claims 29 – 31 are neither vague nor indefinite.

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Rejections under 35 U.S.C. 102(a)

A. Claims 1, 13, and 28

At pages 3 – 4, the Office Action rejects independent claims 1, 13, and 28 as anticipated by U.S. Patent 5,656,939 (“Serizawa”).

10 Serizawa does not teach or suggest an optically controlled switch as recited in claims 1, 13 or a photosensitive switch as recited in claim 28. Instead, Serizawa discloses an object that functions as a photo-sensitive variable resistor. The resistor of Serizawa is different “in kind” rather than only “in degree” from the switch of claims 1, 13, and 28.

In particular, a “switch” has a well-known meaning in the electronic arts. A
15 switch is a device that makes and breaks a connection in an electrical circuit or changes connections in an electrical circuit. As evidence of this well-known definition for the word “switch”, Applicants cite attached page 1578 from The McGraw-Hill Dictionary of Scientific and Technical Terms, 2nd Edition (1978). The Dictionary provides the following definition for “switch” in the field of electricity, i.e., “ELEC”.

20 **switch** ... [ELEC] A manual or mechanical device for making, breaking, or changing the connections in an electrical circuit. Also known as electrical switch.
...

Thus, a “switch” is a device that shifts circuit connections between a discrete set of states, e.g., a made connection or a broken connection.

25 In contrast, Serizawa describes an object (8) that functions as a continuously variable resistor, i.e., an object whose resistance can smoothly change over a continuous range rather than an object whose resistance takes a substantially discrete set of values. Serizawa’s object includes electrodes 9,10 and the curing transformation agent 8, which extends between the electrodes 9, 10. See Serizawa, col. 5, lines 36 –46; Figure 2.

30 Serizawa states that:

In a case that the UV curing transformation agent 8 is irradiated with the UV rays ..., the time change in electric conductivity is measured. Then, as shown in FIG. 7, as the time elapses, the electric conductivity is decreased, so that the

hardness of the UV curing transformation agent comprising pigment can be determined from the decrement of the electric conductivity.

Serizawa, col. 6, lines 24 – 31 (underlining added).

From the above citation, it is clear that Serizawa's "curing transformation agent 8" has a
5 resistance that varies continuously during curing, e.g., the conductivity can change by a
decrement. The continuous variation of the resistance measures continuous changes to
the hardness of the curing transformation agent 8 during a UV curing. Thus, Serizawa
discloses an object that functions as continuously variable resistor.

In contrast to Serizawa, claim 1 recites that the channel is configured to operate as
10 an optically controlled switch. There is a difference "in kind" between the switch of
claim 1, which has an approximately discrete set of states, e.g., CLOSED and OPEN, and
Serizawa's curing transformation agent 8, which has a smooth range of resistances.
Serizawa's curing transformation agent 8 with its smoothly variable resistance is not
equivalent to a channel configured to operate as a switch, which has an approximately
15 discrete set of circuit states. Due to this difference "in kind", Serizawa does not suggest
the switch property of the channel as in claim 1 and thus, does not anticipate claim 1.

In contrast to Serizawa, claim 13 recites a channel configured to operate as an
optically controlled switch in a circuit. There is a difference "in kind" between the
switch of claim 13, which has an approximately discrete set of states, e.g., CLOSED and
20 OPEN, and Serizawa's curing transformation agent 8, which has a smooth range of states,
i.e., a smooth range of resistances. Serizawa's disclosure of curing transformation agent
8 as a variable resistance, does not suggest a channel configured to operate as a switch.
Due to this difference "in kind", Serizawa does not suggest the switch property for the
channel as recited in claim 13 and thus, does not anticipate claim 13.

25 In contrast to Serizawa, claim 28 recites "applying a voltage across an organic
photosensitive switch". There is a difference "in kind" between the switch of claim 28,
which has an approximately discrete set of states and Serizawa's curing transformation
agent 8, which has a smooth range of resistances. Serizawa's curing transformation agent
8 does not suggest a circuit element with an approximately discrete set of circuit states
30 like the switch of claim 28. Due to this difference "in kind", Serizawa does not suggest
the switch of claim 28 and thus, does not anticipate claim 28.

B. Independent claim 25

At page 3, last par., the Office Action rejects independent claims 25 as anticipated by Serizawa. In particular, the Office Action states that:

5 The Serizawa components at 1-4,5 and 7 is a microminiature system which does not preclude the structure as constituting a mem device.

Office Action, page 3, last par.

The Office Action provides no citation to teach that Serizawa's components 1 - 4, 5, and 7 form a microminiature system. Applicants searched for the words "micro", "miniature", and "small" in the text of Serizawa and found no such language. Applicants request that the Examiner either give a specific citation from Serizawa to suggest that "components 1 - 4, 5, and 7 form a microminiature system" or withdraw the rejection. In particular, Applicants request that the Examiner provide a suggestion from Serizawa that UV light source 3 is microminiature. The absence of a teaching for a MEM device as recited in claim 25 makes claim 25 novel over Serizawa.

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C. Dependent claims 2, 12, 14 - 15, 27, and 29 - 31

Claims 2, 12, 14 - 15, 27, and 29 - 31 are novel over Serizawa, at least, by their dependence on a novel base claim, e.g., claim 1, 13, 25, or 28.

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Rejections under 35 U.S.C. 103

At page 4, the Office Action rejects claims 6 and 26 as obvious over a combination of Serizawa and U.S. Patent 5,648,863 ("Liedenbaum").

Claim 6 is non-obvious at least by its dependence on non-obvious base claim 1.

Claim 26 is non-obvious at least by its dependence on non-obvious base claim 25.

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Conclusion

For the above reasons, Applicants respectfully request allowance of claims 1 - 31.

No fee is believed due.

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In the event of any non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit **Lucent Technologies Deposit Account No. 12-2325** to correct the error.

Respectfully,

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